
Publications and Conference Presentations

Publications

- R. Betti and C. Zhou, "Low-Adiabatic Implosions for Fast-Ignition Inertial Confinement Fusion," *J. Phys. IV France* **133**, 379 (2006).
- T. R. Boehly, E. Vianello, J. E. Miller, R. S. Craxton, T. J. B. Collins, V. N. Goncharov, I. V. Igumenshchev, D. D. Meyerhofer, D. G. Hicks, P. M. Celliers, and G. W. Collins, "Shock-Timing Experiments Using Double-Pulse Laser Irradiation," *Phys. Plasmas* **13**, 056303 (2006) (invited).
- J. Bromage, J. D. Zuegel, S.-W. Bahk, D. S. Vickery, L. J. Waxer, D. Irwin, V. Bagnoud, R. Boni, M. D. Moore, R. Jungquist, and C. Stoeckl, "High-Intensity Laser Diagnostics for OMEGA EP," *J. Phys. IV France* **133**, 705 (2006).
- J. Bunkenburg, T. J. Kessler, W. Skulski, and H. Huang, "Phase-Locked Control of Tiled-Grating Assemblies for Chirped-Pulse-Amplified Lasers Using a Mach-Zehnder Interferometer," *Opt. Lett.* **31**, 1561 (2006).
- S. W. Culligan, A. C.-A. Chen, J. U. Wallace, K. P. Klubek, C. W. Tang, and S. H. Chen, "Effect of Hole Mobility Through Emissive Layer on Temporal Stability of Blue Organic Light-Emitting Diodes," *Adv. Funct. Mater.* **16**, 1481 (2006).
- J. L. DeCiantis, F. H. Séguin, J. A. Frenje, V. Berube, M. J. Canavan, C. D. Chen, S. Kurebayashi, C. K. Li, J. R. Rygg, B. E. Schwartz, R. D. Petrasso, J. A. Delettrez, S. P. Regan, V. A. Smalyuk, J. P. Knauer, F. J. Marshall, D. D. Meyerhofer, S. Roberts, T. C. Sangster, C. Stoeckl, K. Mikaelian, H. S. Park, and H. F. Robey, "Proton Core Imaging of the Nuclear Burn in Inertial Confinement Fusion Implosions," *Rev. Sci. Instrum.* **77**, 043503 (2006).
- D. H. Edgell, R. S. Craxton, L. M. Elasky, D. R. Harding, L. S. Iwan, R. L. Keck, L. D. Lund, S. J. Verbridge, M. D. Wittman, A. Warrick, T. Brown, and W. Seka, "Three-Dimensional Characterization of Cryogenic Target Ice Layers Using Shadowgraph Views," *Fusion Sci. Technol.* **49**, 616 (2006).
- D. H. Edgell, W. Seka, R. S. Craxton, L. M. Elasky, D. R. Harding, R. L. Keck, L. D. Lund, and M. D. Wittman, "Characterization of Cryogenic Direct-Drive ICF Targets During Layering Studies and Just Prior to Shot Time," *J. Phys. IV France* **133**, 903 (2006).
- V. N. Goncharov, O. V. Gotchev, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, T. C. Sangster, S. Skupsky, and C. Cherfils-Clerouin, "Ablative Richtmyer-Meshkov Instability: Theory and Experimental Results," *J. Phys. IV France* **133**, 123 (2006).
- D. R. Harding, D. D. Meyerhofer, S. J. Loucks, L. D. Lund, R. Janezic, L. M. Elasky, T. H. Hinterman, D. H. Edgell, W. Seka, M. D. Wittman, R. Q. Gram, D. Jacobs-Perkins, R. Early, T. Duffy, and M. J. Bonino, "Forming Cryogenic Targets for Direct-Drive Experiments," *Phys. Plasmas* **13**, 056316 (2006) (invited).
- M. Haurylau, S. P. Anderson, K. L. Marshall, and P. M. Fauchet, "Electrical Tuning of Photonic-Bandgap Structures in Silicon," *SPIE Newsroom, Nanotechnology*, April 2006, <http://newsroom.spie.org>.
- A. Jukna, I. Barboy, G. Jung, A. Abrutis, X. Li, D. Wang, and R. Sobolewski, "Electric Transport Properties of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Thin-Film Bridges with Laser-Written Channels of Easy Vortex Motion," *J. Appl. Phys.* **99**, 113902 (2006).
- J. H. Kelly, L. J. Waxer, V. Bagnoud, I. A. Begishev, J. Bromage, B. E. Kruschwitz, T. J. Kessler, S. J. Loucks, D. N. Maywar, R. L. McCrory, D. D. Meyerhofer, S. F. B. Morse, J. B. Oliver, A. L. Rigatti, A. W. Schmid, C. Stoeckl, S. Dalton, L. Folsbee, M. J. Guardalben, R. Jungquist, J. Puth, M. J. Shoup III, D. Weiner, and J. D. Zuegel, "OMEGA EP: High-Energy Petawatt Capability for the OMEGA Laser Facility," *J. Phys. IV France* **133**, 75 (2006).

- C. Kim, A. Trajkovska, J. U. Wallace, and S. H. Chen, "New Insight into Photoalignment of Liquid Crystals on Coumarin-Containing Polymer Films," *Macromolecules* **39**, 3817 (2006).
- A. K. Knight and D. R. Harding, "Modeling Polymer Vapor Deposition: PMDA-ODA Poly(amic Acid)," *Fusion Sci. Technol.* **49**, 728 (2006).
- A. Korneev, O. Minaeva, I. Rubtsova, I. Milostnaya, G. Chulkova, B. Voronov, K. Smirnov, V. Seleznev, G. Gol'tsman, A. Pearlman, W. Słysz, A. Cross, P. Alvarez, A. Verevkin, R. Sobolewski, "Superconducting Single-Photon Ultrathin NbN Film Detector," *Quantum Electron.* **35**, 698 (2005).
- B. E. Kruschwitz, R. Jungquist, J. Qiao, S. Abbey, S. E. Dean, D. N. Maywar, M. D. Moore, L. J. Waxer, and M. E. Wilson, "Large-Aperture Deformable Mirror Correction of Tiled-Grating Wavefront Error," *J. Phys. IV France* **133**, 645 (2006).
- C. K. Li and R. D. Petrasso, "Energy Deposition of MeV Electrons in Compressed Target of Fast-Ignition Inertial Confinement Fusion," *Phys. Plasmas* **13**, 056314 (2006).
- S. G. Lukishova, N. Lepeshkin, R. W. Boyd, and K. L. Marshall, "Far-Field Patterns from Dye-Doped Planar-Aligned Nematic Liquid Crystals Under Nanosecond Laser Irradiation," *Mol. Cryst. Liq. Cryst.* **453**, 393 (2006).
- S. G. Lukishova and A. W. Schmid, "Near-Field Optical Microscopy of Defects in Cholesteric Oligomeric Liquid Crystal Films," *Mol. Cryst. Liq. Cryst.* **454**, 417 (2006).
- S. G. Lukishova, R. P. Knox, P. Freivald, A. McNamara, R. W. Boyd, C. R. Stroud, Jr., A. W. Schmid, and K. L. Marshall, "Single-Photon Source for Quantum Information Based on Single Dye Molecule Fluorescence in Liquid Crystal Host," *Mol. Cryst. Liq. Cryst.* **454**, 403 (2006).
- J. A. Marozas, F. J. Marshall, R. S. Craxton, I. V. Igumenshchev, S. Skupsky, M. J. Bonino, T. J. B. Collins, R. Epstein, V. Yu. Glebov, D. Jacobs-Perkins, J. P. Knauer, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, S. G. Noyes, P. B. Radha, T. C. Sangster, W. Seka, and V. A. Smalyuk, "Polar-Direct-Drive Simulations and Experiments," *Phys. Plasmas* **13**, 056311 (2006) (invited).
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- K. L. Marshall, K. Adelsberger, G. Myhre, and D. W. Griffin, "The LCPDI: A Compact and Robust Phase-Shifting, Point-Diffraction Interferometer Based on Dye-Doped LC Technology," *Mol. Cryst. Liq. Cryst.* **454**, 23 (2006).
- K. L. Marshall, G. Painter, K. Lotito, A. G. Noto, and P. Chang, "Transition Metal Dithiolene Near-IR Dyes and Their Applications in Liquid Crystal Devices," *Mol. Cryst. Liq. Cryst.* **454**, 47 (2006) (invited).
- R. L. McCrory, D. D. Meyerhofer, S. J. Loucks, S. Skupsky, R. Betti, T. R. Boehly, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, D. H. Edgell, R. Epstein, K. A. Fletcher, C. Freeman, J. A. Frenje, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, I. V. Igumenshchev, R. L. Keck, J. D. Kilkenny, J. P. Knauer, C. K. Li, J. Marciante, J. A. Marozas, F. J. Marshall, A. V. Maximov, P. W. McKenty, S. F. B. Morse, J. Myatt, S. Padalino, R. D. Petrasso, P. B. Radha, S. P. Regan, T. C. Sangster, F. H. Séguin, W. Seka, V. A. Smalyuk, J. M. Soures, C. Stoeckl, B. Yaakobi, and J. D. Zuegel, "Progress in Direct-Drive Inertial Confinement Fusion Research at the Laboratory for Laser Energetics," *J. Phys. IV France* **133**, 59 (2006).
- J. B. Oliver and D. Talbot, "Optimization of Deposition Uniformity for Large-Aperture National Ignition Facility Substrates in a Planetary Rotation System," *Appl. Opt.* **45**, 3097 (2006).
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- S. Skupsky, R. S. Craxton, F. J. Marshall, R. Betti, T. J. B. Collins, R. Epstein, V. N. Goncharov, I. V. Igumenshchev, J. A. Marozas, P. W. McKenty, P. B. Radha, J. D. Kilkenny, D. D. Meyerhofer, T. C. Sangster, and R. L. McCrory, "Polar Direct Drive—Ignition at 1 MJ," *J. Phys. IV France* **133**, 233 (2006).
- W. Słysz, M. Węgrzecki, J. Bar, P. Grabiec, M. Górská, V. Zwiller, C. Latta, P. Bohi, I. Milostnaya, O. Minaeva, A. Antipov, O. Okunev, A. Korneev, K. Smirnov, B. Voronov,

N. Kaurova, G. Gol'tsman, A. Pearlman, A. Cross, I. Komissarov, A. Verevkin, and R. Sobolewski, "Fiber-Coupled Single-Photon Detectors Based on NbN Superconducting Nanostructures for Practical Quantum Cryptography and Photon-Correlation Studies," *Appl. Phys. Lett.* **88**, 261113 (2006).

V. A. Smalyuk, O. Sadot, R. Betti, V. N. Goncharov, J. A. Delettrez, D. D. Meyerhofer, S. P. Regan, T. C. Sangster, and D. Shvarts, "Rayleigh-Taylor Growth Measurements of Three Dimensional Modulations in a Nonlinear Regime," *Phys. Plasmas* **13**, 056312 (2006) (invited).

C. Stoeckl, J. A. Delettrez, J. H. Kelly, T. J. Kessler, B. E. Kruschwitz, S. J. Loucks, R. L. McCrory, D. D. Meyerhofer, D. N. Maywar, S. F. B. Morse, J. Myatt, A. L. Rigatti, L. J. Waxer, J. D. Zuegel, and R. B. Stephens, "High-Energy Petawatt Project at the University of Rochester's Laboratory for Laser Energetics," *Fusion Sci. Technol.* **49**, 367 (2006).

W. Theobald, K. Akli, R. Clarke, J. A. Delettrez, R. R. Freeman, S. Glenzer, J. Green, G. Gregori, R. Heathcote, N. Izumi, J. A. King, J. A. Koch, J. Kuba, K. Lancaster, A. J. MacKinnon,

M. Key, C. Mileham, J. Myatt, D. Neely, P. A. Norreys, H.-S. Park, J. Pasley, P. Patel, S. P. Regan, H. Sawada, R. Shepherd, R. Snavelly, R. B. Stephens, C. Stoeckl, M. Storm, B. Zhang, and T. C. Sangster, "Hot Surface Ionic Line Emission and Cold K-Inner Shell Emission from Petawatt-Laser-Irradiated Cu Foil Targets," *Phys. Plasmas* **13**, 043102 (2006).

J. U. Wallace and S. H. Chen, "Simplified Scheme for Deterministic Synthesis of Chiral-Nematic Glassy Liquid Crystals," *Ind. Eng. Chem. Res.* **45**, 4494 (2006).

J. D. Zuegel, V. Bagnoud, J. Bromage, I. A. Begishev, and J. Puth, "High-Performance OPCPA Laser System," *J. Phys. IV France* **133**, 701 (2006).

J. D. Zuegel, S. Borneis, C. Barty, B. LeGarrec, C. Danson, N. Miyanaga, P. K. Rambo, C. LeBlanc, T. J. Kessler, A. W. Schmid, L. J. Waxer, J. H. Kelly, B. Kruschwitz, R. Jungquist, E. Moses, J. Britten, I. Jovanovic, J. Dawson, and N. Blanchot, "Laser Challenges for Fast Ignition," *Fusion Sci. Technol.* **49**, 453 (2006).

Forthcoming Publications

I. V. Igumenshchev, "Three-Dimensional Simulations of Spherical Accretion Flows with Small-Scale Magnetic Fields," to be published in the *Astrophysical Journal*.

Z. Jiang and J. R. Marciante, "Mode-Area-Scaling of Helical-Core, Dual-Clad Fiber Lasers and Amplifiers Using an Improved Bend Loss Model," to be published in the *Journal of the Optical Society of America B*.

J. R. Marciante and J. D. Zuegel, "High-Gain, Polarization-Preserving, Yb-Doped Fiber Amplifier for Low-Duty-Cycle Pulse Amplification," to be published in *Applied Optics*.

J. A. Marozas, "Fourier-Transform-Based Continuous Phase-Plate Design Technique: A High-Pass Phase-Plate Design as an Application for OMEGA and the NIF," to be published in the *Journal of the Optical Society of America A*.

S. N. Shafir, J. C. Lambropoulos, and S. D. Jacobs, "A Magnetorheological Polishing-Based Approach for Studying Precision Microground Surfaces of Tungsten Carbides," to be published in *Precision Engineering*.

W. Słysz, M. Węgrzecki, J. Bar, P. Grabiec, M. Górska, V. Zwiller, C. Latta, P. Bohi, A. J. Pearlman, A. S. Cross, D. Pan, J. Kitaygorsky, I. Komissarov, A. Verevkin, I. Milostnaya, A. Korneev, O. Minayeva, G. Chulkova, K. Smirnov, B. Voronov, G. N. Gol'tsman, and R. Sobolewski, "Fiber-Coupled, Single-Photon Detector Based on NbN Superconducting Nanostructures for Quantum Communications," to be published in the *Journal of Modern Optics*.

Conference Presentations

S. G. Lukishova, A. W. Schmid, R. S. Knox, P. Freivald, L. Bissell, R. W. Boyd, C. R. Stroud, Jr., and K. L. Marshall, "Deterministically Polarized, Room-Temperature Source of Single Photons," Workshop on Linear Optical Quantum Information Processing, Baton Rouge, LA, 10–12 April 2006.

C. Wu and D. R. Harding, "Chemical Vapor Deposition of Carbon Nanotube-Reinforced Polymer Composites," 2006 MRS Spring Meeting, San Francisco, CA, 17–21 April 2006.

A. K. Knight, F.-Y. Tsai, T. N. Blanton, D. R. Harding, and S. H. Chen, "Optimizing the Vapor Deposition Method of Making Polyimide," 12th Meeting of the Symposium on Polymers for Microelectronics, Wilmington, DE, 3–5 May 2006.

The following presentations were made at the 16th Topical Conference on High-Temperature Diagnostics, Williamsburg, VA, 7–11 May 2006:

V. Yu. Glebov, D. D. Meyerhofer, T. C. Sangster, C. Stoeckl, S. Roberts, C. A. Barrera, J. R. Celeste, C. J. Cerjan, L. S. Dauffy, D. C. Eder, R. L. Griffith, S. W. Haan, B. A. Hammel, S. P. Hatchett, N. Izumi, J. R. Kimbrough, J. A. Koch, O. L. Landen, R. A. Lerche, B. J. MacGowan, M. J. Moran, E. W. Ng, T. W. Phillips, P. M. Song, R. Tommassini, B. K. Young, S. E. Caldwell, G. P. Grim, S. C. Evans, J. M. Mack, T. J. Sedillo, M. D. Wilke, D. C. Wilson, C. S. Young, D. Casey, J. A. Frenje, C. K. Li, R. D. Petrasso, F. H. Séguin, J. L. Bourgade, L. Disdier, M. Houry, I. Lantejoulé, O. Landoas, G. A. Chandler, G. W. Cooper, R. J. Leeper, R. E. Olson, C. L. Ruiz, M. A. Sweeney, S. P. Padalino, C. Horsfield, and B. A. Davis, "Development of Nuclear Diagnostics for the National Ignition Facility" (invited).

V. Yu. Glebov, C. Stoeckl, T. C. Sangster, C. Mileham, and R. A. Lerche, "High-Yield Bang Time Detector for the OMEGA Laser."

J. P. Knauer, F. J. Marshall, B. Yaakobi, D. Anderson, B. A. Schmitt, K. M. Chandler, S. A. Pikuz, T. A. Shelkovenko, M. D. Mitchell, and D. A. Hammer, "Response Model for Kodak Biomax-MS Film to X Rays."

F. J. Marshall, J. P. Knauer, D. Anderson, and B. A. Schmitt, "Absolute Calibration of Kodak Biomax-MS Film to X Rays in the 1.5- to 8-keV Range."

C. Stoeckl, V. Yu. Glebov, P. A. Jaanimagi, D. D. Meyerhofer, T. C. Sangster, M. Storm, S. Sublett, W. Theobald, M. H. Key, A. J. MacKinnon, P. K. Patel, D. Neely, and P. A. Norreys, "Operation of Target Diagnostics in a Petawatt Environment" (invited).

The following presentations were made at the Glass and Optical Materials Division Spring 2006 Meeting, Greenville, SC, 16–19 May 2006:

J. E. DeGrootte, A. E. Marino, J. P. Wilson, and S. D. Jacobs, "The Role of Nanodiamond Abrasives in Optical Glass Removal with Magnetorheological Finishing (MRF)."

J. E. DeGrootte, J. P. Wilson, T. M. Pfuntner, and S. D. Jacobs, "Incorporating Optical Glass Chemical Durability into a Glass Removal Model for Magnetorheological Finishing (MRF)."

The following presentations were made at CLEO/QELS 2006, Long Beach, CA, 21–26 May 2006:

W. R. Donaldson, D. N. Maywar, R. G. Roides, J. R. Marcianté, J. H. Kelly, J. D. Zuegel, and R. L. Keck, "High-Bandwidth, Pulse-Shape Control on a Frequency-Tripled Multiterawatt Solid-State Laser."

C. Dorrer and J. D. Zuegel, "Design and Analysis of Beam Apodizers Using Error Diffusion."

S. G. Lukishova, A. W. Schmid, R. S. Knox, P. Freivald, L. Bissell, R. W. Boyd, C. R. Stroud, Jr., and K. L. Marshall, "Deterministically Polarized, Room-Temperature Source of Single Photons Based on a Single-Emitter Fluorescence in Aligned Liquid Crystal Hosts."

J. R. Marciante, W. A. Bittle, and J. D. Zuegel, "Subpicosecond Jitter from a Precision Optical Triggering and Timing System Without Active Stabilization."

A. K. Knight, F.-Y. Tsai, and D. R. Harding, "Using Experiments and Calculations to Analyze Gas Flow and Surface Reaction in the Vapor Deposition of a Copolymer," FLUENT 2006 CFD Summit, Monterey, CA, 22–24 May 2006.

The following presentations were made at the 36th Anomalous Absorption Conference, Jackson Hole, WY, 4–9 June 2006:

R. S. Craxton, F. J. Marshall, M. J. Bonino, R. Epstein, V. Yu. Glebov, J. A. Marozas, S. G. Noyes, and V. A. Smalyuk, "An Update on Polar-Direct-Drive Experiments on OMEGA."

A. V. Maximov, J. Myatt, and R. W. Short, "Transport Near Critical Density Surface in Direct-Drive ICF Plasmas."

J. Myatt, A. V. Maximov, and R. W. Short, "Laboratory Astrophysics of e^+e^- Pair-Plasma Production on OMEGA EP."

W. Seka, V. N. Goncharov, J. A. Delettrez, R. W. Short, and R. S. Craxton, "Laser Absorption in Spherical Target Experiments on OMEGA."

R. W. Short and J. Myatt, "Filamentation of Fast-Ignition Transport in Plasmas: Spatial Growth and Absolute Modes."

The following presentations were made at the 29th ECLIM, Madrid, Spain, 11–16 June 2006:

R. L. McCrory, "Highlights of the History of the University of Rochester's Laboratory for Laser Energetics."

R. L. McCrory, "Present and Future Research at the Laboratory for Laser Energetics."

R. Betti, K. Anderson, T. R. Boehly, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, D. H. Edgell, R. Epstein, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, R. L. Keck, J. H. Kelly, J. P. Knauer, S. J. Loucks, J. A. Marozas, F. J. Marshall, A. V. Maximov, D. N. Maywar, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, J. Myatt, P. B. Radha, S. P. Regan, C. Ren, T. C. Sangster, W. Seka, S. Skupsky, V. A. Smalyuk, J. M. Soures, C. Stoeckl, W. Theobald, B. Yaakobi, C. Zhou, J. D. Zuegel, C. K. Li, R. D. Petrasso, F. H. Séguin, and J. A. Frenje, "Progress in Hydrodynamic Theory and Experiments for Direct-Drive and Fast-Ignition Inertial Confinement Fusion," 33rd European Physical Society Conference on Plasma Physics, Rome, Italy, 19–23 June 2006 (invited).

A. Melchior, T. R. Boehly, and J. E. Miller, "High-Pressure and Temperature Equation-of-State Studies Using Laser-Driven Shocks," Gordon Research Conference on High Pressure, Biddeford, ME, 25–30 June 2006.

W. Seka, "Overview of the LLE Effort in Support of the U.S. National HED and ICF Programs," JOWOG 37, Aldermaston, UK, 26–30 June 2006.